REMARKS

By this Amendment, Applicant has amended claims 12, 16, 17 and 20. Claims 2, 7 and 12-20 are pending.

Claim Rejections Under 35 USC Section 102

Claims 2, 7, 12-18, and 20 stand rejected under 35 USC Section 102(b) as being anticipated by Sun. Applicant respectfully traverses this Section 102(b) rejection.

Claims 12, 16, 17-20 are independent claims. Claims 2, 13-15 are dependent on claim 12, and claims 18 and 19 are dependent on claim 17.

Turning first to claim 20, it is directed to a decoding apparatus for decoding an image signal representing motion, where the image signal is a bit stream of a coded compressed video signal. The decoding apparatus of claim 20 includes the following elements:

- means for decoding the bit stream for information defining pixel blocks,

- means for detecting an error in the information of one of the pixel blocks **in each of at least two frames which are prior to the present frame,**

- means for storing error information of the one of the pixel blocks **in each of the at least two frames which are prior to the present frame,**

- means for storing video information of the at least two frames which are prior to the present frame,

- means for generating, from the at least two frames, at least two predicted pixel blocks corresponding to a present pixel block in the present frame,

- means for judging if one of the at least two predicted pixel blocks corresponds to error information **of the at least two frames** stored in the means for storing, and

- means for determining if the one of the at least predicted pixel blocks is used in reconstructing the present block, based on judging of the means for judging.

Applicant contends that among the features of the decoding apparatus of claim 20 not found in the reference of record is the feature of the inter-relationship of the means for detecting and the means for storing error information with the means for judging. More specifically, the means for detecting detects an error in the information of one of the pixel blocks in each of at least two frames which are prior to a present frame. The means for storing error information of the one of the pixel blocks stores the error information of each the at least two frames which are prior to the present frame. This feature of applicant's claimed invention is hereinafter generally referred to as the "At Least Two Frames Feature." It is applicant's contention that the Sun Patent, or any of the other references of record, does not teach or suggest the At Least Two Frames Feature of Applicant's claimed invention.

The Sun Patent concerns an error concealment apparatus for HDTV receivers. According to the Sun Patent, image reproduction in a television receiver includes post-processing adaptive error concealment. According to Sun, a compressed video signal is examined to determine blocks of video signal containing errors, and error tokens are generated for identifying corresponding blocks of decompressed pixel values. Pixel values adjacent the decompressed blocks of pixel values containing errors are examined to generate estimates of the relative image motion and image detail in the area of such blocks. The block of pixel values is replaced with temporally displaced co-located blocks of pixel values or interpolated data depending upon whether the estimate of image motion is less or greater than the estimate of image detail.

Applicant also notes that in the Sun Patent the apparatus memorizes information of an error occurred position of the present frame (current frame) in an error map. This is in sharp contrast to Applicant's claimed invention where the apparatus

memorizes information of an error occurred position of the previous frame in an error map. Thus the Sun Patent does not anticipate or suggest the At Least Two Frames Feature of Applicant's claimed invention and the inter-relationship between the means for detecting, means for storing, and means for judging as set forth in claim 20.

Generally, in conventional moving picture decoding there is often found the problem of processing error propagation over frames. But because of Applicant's claimed invention, error propagation does not result because picture data of an error occurred position in a previous frame is not used for decoding the present frame picture data. Thus, this is an advantage of Applicant's claimed invention not heretofore appreciated by those skilled in the art, as well as the Sun Patent. Because the Sun Patent does not consider the advantage offered by Applicant's claimed invention, it is not surprising that the Sun Patent does not anticipate or render obvious Applicant's invention as set forth in claim 20.

Applicant has amended independent claims 12, 16 and 17 in a manner similar to that of claim 20 so that all pending claims substantially include the At Least Two Frames Feature. Based on this Feature, all pending claims are patentably distinguished from the Sun Patent. Applicant, therefore, requests that the Section 102(b) rejection based on the Sun Patent be withdrawn.

Claims Rejections Under Section 103

Claim 19 stands rejected under 35 USC Section 103(a) as being unpatentable over Sun in view of Tahara. Applicant respectfully traverses this Section 103(a) rejection.

Claim 19 is dependent on claim 17 and therefore includes the At Least Two Frames Feature and is therefore patentably distinguished from the Sun Patent.

The Tahara Patent concerns a stereoscopic coding system for transmitting stereo imaged data, wherein an image of the left eye is disposed in odd fields and an image of the right eye is disposed in even fields, respectively. For example, Frame 1, Frame 2, Frame 3 and Frame 4 are sequentially coded in an order of I picture, B picture, P picture and B picture. The picture in each frame is coded by adaptively switching

between a frame prediction mode or field prediction mode, or a frame DCT mode or field DCT mode. The Tahara Patent is cited primarily with respect to the coding of a dynamic image signal as shown in Figure 4. However, Applicant respectfully submits that this coding of a dynamic image signal does not teach or suggest the At Least Two Frames Feature of Applicant's claimed invention. Thus the Tahara Patent does not rectify the heretofore discussed deficiencies of the Sun Patent.

Based on the foregoing remarks, applicant requests that the Section 103(a) directed to claim 19 be withdrawn.

In view of the foregoing remarks and amendments, Applicant respectfully submits that claims 2, 7, and 12-20 are in condition for allowance. Reconsideration and allowance of all pending claims are respectfully requested.

Respectfully Submitted,

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Enclosure: Version With Markings To Show Changes Made
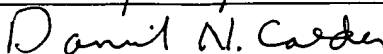
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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS:

1   12.   (Amended) A method for decoding an image signal representing
2   motion, the image signal being a bit stream of a coded compressed video signal, the
3   method comprising the steps of:

4   decoding the bit stream for information defining pixel blocks;

5   detecting an error in the information of one of the pixel blocks in each of at
6   least two frames which are prior to a present frame;

7   storing error information of the one of the pixel blocks in each of the at least
8   two frames which are prior to the present frame, in an error memory;

9   storing, in a frame memory, video information of the at least two frames which
10   are prior to a present frame;

11   generating, from the at least two frames, at least two predicted pixel blocks
12   corresponding to a present pixel block in the present frame;

13   judging if one of the at least two predicted pixel blocks corresponds to error
14   information of the at least two frames stored in the error memory; and

15   based on the judging, determining if the one of the at least two predicted pixel
16   blocks is used in reconstructing the present pixel block.

1   16.   (Amended) A method for decoding an image signal representing motion
2   and reconstructing video frames of the image signal, the method comprising the steps
3   of:

4   decoding the image signal to define pixel blocks of video frames;

5   generating decoding error maps indicating decoding errors of pixel blocks <u>in</u>

6   <u>each of at least two frames which are prior to a present</u> ~~of a~~ video frame;

7   storing the decoding error maps in error memory;

8   storing, in a frame memory, video information of <u>the</u> at least two frames which

9   are prior in time to a<u>the</u> present video frame;

10   generating, from the at least two frames, at least two predicted pixel blocks

11   corresponding to a present pixel block in the present video frame;

12   determining if a predicted pixel block ~~corresponds to a decoding error in a~~

13   ~~decoding error map stored in the error memory~~ <u>includes decoding errors corresponding</u>

14   <u>to decoding errors in either of the at least two frames which are prior to the present</u>

15   <u>frame</u>; and

16   based on the determining, judging if the predicted pixel block is used in

17   reconstructing the present video block.

1   17.   (Amended) A decoding apparatus for decoding an image signal

2   representing motion; the decoding apparatus comprising;

3   a decoding device for decoding the image signal to define pixel blocks of video

4   frames;

5   means for detecting decoding errors of the pixel blocks <u>in each of at least two</u>

6   <u>frames which are prior to a present video frame</u>;

7   an error memory for storing decoding error maps of the decoding errors of the

8   pixel blocks <u>in each of the at least two frames which are prior to the present frame</u>;

9   motion compensation means for generating at least two predicted pixel blocks

10   corresponding to a present block in a present video frame; and

11   predicted image selecting means, based on the decoding error maps,

12 determining if the predicted pixel blocks include decoding errors <u>corresponding to</u>

13 <u>decoding errors in either of the at least two frames which are prior to the present</u>

14 <u>frame,</u> and thereby determining use of the predicted pixel blocks in reconstructing the

15 present block.

1   20.   (Amended) A decoding apparatus for decoding an image signal

2   representing motion, the image signal being a bit stream of a coded compressed video

3   signal, the decoding apparatus comprising:

4   means for decoding the bit stream for information defining pixel blocks;

5   means for detecting an error in the information of one of the pixel blocks <u>in</u>

6   <u>each of at least two frames which are prior to a present frame;</u>

7   means for storing error information of the one of the pixel blocks in <u>each of the</u>

8   <u>at least two frames which are prior to the present frame</u>~~an error memory~~;

9   means for storing video information of <u>the</u> at least two frames which are prior

10 to a present frame;

11   means for generating, from the at least two frames, at least two predicted pixel

12 blocks corresponding to a present pixel block in the present frame;

13   means for judging if one of the at least two predicted pixel blocks corresponds to

14 error information <u>of the at least two frames</u> stored in the means for storing; and

15   means for determining if the one of the at least two predicted pixel blocks is used in

16 reconstructing the present block, based on judging of the means for judging.